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Search Results - Record(s) 1 through 11 of 11 returned.

☐ 1. Document ID: US 6615166 B1

L6: Entry 1 of 11

File: USPT

Sep 2, 2003

US-PAT-NO: 6615166

DOCUMENT-IDENTIFIER: US 6615166 B1

TITLE: Prioritizing components of a network framework required for implementation of technology

DATE-ISSUED: September 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Guheen; Michael F.	Tiburon	CA		
Mitchell; James D.	Manhattan Beach	CA		
Barrese; James J.	San Jose	CA		

US-CL-CURRENT: [703/27](#); [703/26](#), [709/220](#), [709/223](#), [709/231](#), [717/140](#), [719/316](#)

ABSTRACT:

A system and method are provided for prioritizing components of an existing network framework. First, a plurality of components required for implementation of a predetermined technology using an existing network framework are provided. Next, a priority listing of the components is compiled such that the relative position of the components on the priority listing corresponds to a temporal priority among the components. The existing network framework and the components are pictorially represented. Next, a first component of the existing network framework is indicia coded in order to indicate that the first component must be installed first based on the component's position on the priority listing. Thereafter, a second component and any remaining components of the existing network framework is indicia encoded in order to indicate that the second component and any remaining components must be installed after the first component based on the second component's position on the priority listing.

18 Claims, 177 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 177

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Keywords	Drawings
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☐ 2. Document ID: US 6601233 B1

US-PAT-NO: 6601233

DOCUMENT-IDENTIFIER: US 6601233 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Business components framework

DATE-ISSUED: July 29, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Underwood; Roy Aaron	Long Grove	IL		

US-CL-CURRENT: 717/102; 717/100, 717/101, 717/103, 717/104, 717/106, 717/107

## ABSTRACT:

A method of generating software based on business components. A plurality of logical business components in a business are first defined with each business component having a plurality of capabilities. Next, functional interrelationships are identified between the logical business components. Code modules are then generated to carry out the capabilities of the logical business components and the functional interrelationships between the logical business components, wherein the code modules represent a transformation of the logical business components to their physical implementation, while ensuring the capabilities that are carried out by each code module are essentially unique to the logical business component associated with the code module. Next, the functional aspects of the code modules and the functional relationships of the code modules are tested. The code modules are then subsequently deployed in an e-commerce environment.

18 Claims, 177 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 111

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Publ	Draw
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☐ 3. Document ID: US 6536037 B1

US-PAT-NO: 6536037

DOCUMENT-IDENTIFIER: US 6536037 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Identification of redundancies and omissions among components of a web based architecture

DATE-ISSUED: March 18, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Guheen; Michael F	Tiburon	CA
Mitchell; James D.	Manhattan Beach	CA
Barrese; James J.	San Jose	CA

US-CL-CURRENT: 717/151; 703/2, 709/231

ABSTRACT:

A system, method and article of manufacture are provided for conveying redundancies and omissions among components of a network framework such as a web architecture framework. First, an area of an existing network framework is determined in which redundancies and omissions exist. Next, a pictorial representation of the existing network framework is presented along with a plurality of its components. The foregoing redundancies and the omissions are then highlighted by indicia coding the components of the existing network that reside in the area. As such, a diagnostic analysis of redundant efforts and gaps in a current implementation of the existing network framework is effectively conveyed.

19 Claims, 177 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 177

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 4. Document ID: US 6499054 B1

L6: Entry 4 of 11

File: USPT

Dec 24, 2002

US-PAT-NO: 6499054  
DOCUMENT-IDENTIFIER: US 6499054 B1

TITLE: Control and observation of physical devices, equipment and processes by multiple users over computer networks

DATE-ISSUED: December 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hesselink; Lambertus	Atherton	CA		
Rizal; Dharmarus	Palo Alto	CA		
Bjornson; Eric S.	Mountain View	CA		

US-CL-CURRENT: 709/204; 709/231

ABSTRACT:

A method and system for enabling multiple users from different physical locations to access, observe, control and manipulate physical processes and devices over a computer network such as the Internet is disclosed. A user may visually monitor the physical set up and state of an experiment or environment by receiving live video and data, as well as directly control instrumentation while receiving live feedback regarding the input commands. Measurement data may be collected into a database and

computational analysis can be generated and displayed as a physical process is being performed. An online interactive laboratory notebook is also provided that manages items such as collected data, laboratory parameters, "to do" lists, personal notes, etc.

1 Claims, 19 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 9

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 5. Document ID: US 6477580 B1

L6: Entry 5 of 11

File: USPT

Nov 5, 2002

US-PAT-NO: 6477580  
DOCUMENT-IDENTIFIER: US 6477580 B1

TITLE: Self-described stream in a communication services patterns environment

DATE-ISSUED: November 5, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowman-Amuah; Michel K.	Colorado Springs	CO		

US-CL-CURRENT: 709/231; 709/236

ABSTRACT:

A system, method, and article of manufacture are described for providing a self-describing stream-based communication system. Messages are sent which include data between a sending system and a receiving system. Meta-data is attached to the messages being sent between the sending system and the receiving system. The data of the messages sent from the sending system to the receiving system is translated based on the meta-data. The meta-data includes first and second sections. The first section identifies a type of object associated with the data and a number of attribute descriptors in the data. The second section includes a series of the attribute descriptors defining elements of the data.

20 Claims, 195 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 123

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 6. Document ID: US 6381640 B1

L6: Entry 6 of 11

File: USPT

Apr 30, 2002

US-PAT-NO: 6381640

DOCUMENT-IDENTIFIER: US 6381640 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Method and apparatus for automated personalization and presentation of workload assignments to agents within a multimedia communication center

DATE-ISSUED: April 30, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beck; Christopher Clemmett Macleod	Oceanside	CA		
Berke; Jonathan Michael	San Diego	CA		
Johnstone; Joel A	San Diego	CA		
Mitchell; Robin Marie	Cardiff	CA		
Powers; James Karl	Carlsbad	CA		
Sidell; Mark Franklin	Chapel Hill	NC		
Knuff; Charles Dazler	Carksbad	CA		

US-CL-CURRENT: 709/223; 705/10, 705/8, 705/9, 709/200, 709/201, 709/202, 709/204, 709/206, 709/224, 709/227

ABSTRACT:

In a multimedia call center (MMCC) an agent work presentation software model (AWPM) may be programmed to an individual agent or group of agents, and set to launch automatically each time an agent for whom the model is programmed logs on to the operating system of the MMCC. The AWPM has interfaces for accessing all necessary information to prepare agent work lists, such as agent skills, licenses, authorizations, waiting calls, and waiting work of other sorts, and automatically accesses the needed information and prepares a dynamic work list to an agent for the duration of a work session. Work lists are updated by the pertinent AWPM as each agent accomplishes tasks, and work-in-progress is updates as well. Many other tasks may be done as well, such as statistical updates, agent rating, alerts, and so on.

4 Claims, 19 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 19

Full	Title	Citation	Front	Review	Classification	Date	Reference				Claims	Index	Drawings
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☐ 7. Document ID: US 6332163 B1

L6: Entry 7 of 11

File: USPT

Dec 18, 2001

US-PAT-NO: 6332163

DOCUMENT-IDENTIFIER: US 6332163 B1

TITLE: Method for providing communication services over a computer network system

DATE-ISSUED: December 18, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bowman-Amuah; Michel K.	Colorado Springs	CO		

US-CL-CURRENT: 709/231; 709/217, 709/223, 709/227, 719/329

## ABSTRACT:

A system, method and article of manufacture are provided for implementing communication services patterns. A fixed format stream-based communication system is provided and service is delivered via a globally addressable interface. Access is afforded to a legacy system. Service is delivered via a locally addressable interface. A null value is communicated and data is transmitted from a server to a client via pages. A naming service and a client are interfaced with the naming service allowing access to a plurality of different sets of services from a plurality of globally addressable interfaces. A stream-based communication system is provided and data is efficiently retrieved.

15 Claims, 195 Drawing figures  
 Exemplary Claim Number: 1  
 Number of Drawing Sheets: 123

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Publ	Draw
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☐ 8. Document ID: US 6170011 B1

L6: Entry 8 of 11

File: USPT

Jan 2, 2001

US-PAT-NO: 6170011

DOCUMENT-IDENTIFIER: US 6170011 B1

TITLE: Method and apparatus for determining and initiating interaction directionality within a multimedia communication center

DATE-ISSUED: January 2, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Macleod Beck; Christopher Clemmett	Oceanside	CA		
Berke; Jonathan Michael	San Diego	CA		
Johnstone; Joel A	San Diego	CA		
Mitchell; Robin Marie	Cardiff	CA		
Powers; James Karl	Carlsbad	CA		
Sidell; Mark Franklin	Chapel Hill	NC		
Knuff; Charles Dazler	Carlsbad	CA		

US-CL-CURRENT: 709/224; 379/265.01, 705/10, 705/8, 705/9, 709/223

## ABSTRACT:

A campaign module in a multimedia cal center has programmable dynamic campaign module (DCM) for facilitating and monitoring outbound campaigns. The DCM comprises

an interaction-level monitoring function for monitoring interaction level of the MMCC according to programmed criteria, and comparing the real-time level with a preset threshold, a search and retrieve function for searching a data repository storing records of interactions and retrieving interaction data for specific interactions according to programmed criteria, a scripting function for selecting agents of the MMCC for participating in a campaign, and for preparing task lists for said agents; and an initiation function for initiating a campaign and distributing the task lists to the selected agents. During times of interaction level above the preset threshold the DCM searches the data repository, retrieves data, and prepares agent and task lists for a campaign, and when the interaction level falls below the preset threshold, the DCM launches and distributes task lists to agents selected for a campaign.

16 Claims, 17 Drawing figures  
 Exemplary Claim Number: 1  
 Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 9. Document ID: US 6115693 A

L6: Entry 9 of 11

File: USPT

Sep 5, 2000

US-PAT-NO: 6115693  
 DOCUMENT-IDENTIFIER: US 6115693 A

TITLE: Quality center and method for a virtual sales and service center

DATE-ISSUED: September 5, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McDonough; Charles	Charlotte	NC		
Bethea; W. Mike	Charlotte	NC		
Yeckley; Bonnie	Charlotte	NC		

US-CL-CURRENT: 705/10; 379/225, 379/32.01, 705/11, 705/26, 705/7, 705/8, 705/9

ABSTRACT:

A Quality Center for a Virtual Sales and Service Center. The Quality Center is responsible for monitoring the "customer experience" across the telephone customer access resource. The Quality Center assists in managing the business of operating multiple call centers as a single Virtual Sales and Service Center and presents the business in a professional, informative and impressive manner. The Quality Center includes a forecasting system for predicting contact volume for a plurality of physical locations forming a Virtual Sales and Service Center, a monitor for monitoring contact traffic for the Virtual Sales and Service Center, a controller for controlling network routing based upon the call volume predictions and the contact traffic monitoring and a processor for providing an interface between the forecasting system, the monitor and the controller and for servicing requests and response therebetween. The Quality Center may further include a reporting system for accessing statistics for generating management reports regarding the operation of the Virtual Sales and Service Center, a messaging system for providing messaging

between the physical locations and a trouble-shooting system for analyzing and solving problems occurring in the Virtual Sales and Service Center.

64 Claims, 7 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 10. Document ID: US 5926637 A

L6: Entry 10 of 11

File: USPT

Jul 20, 1999

US-PAT-NO: 5926637  
DOCUMENT-IDENTIFIER: US 5926637 A

TITLE: Service interface repository code generation data

DATE-ISSUED: July 20, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cline; Owen Richard	Poway	CA		
Eutsler; B. Charles	Escondido	CA		
Pare; My Tien	San Diego	CA		
Smurlo; Pamela Morgan	San Diego	CA		

US-CL-CURRENT: 717/103; 711/115, 717/108

ABSTRACT:

A method, apparatus, and article of manufacture for generation of tools and applications for a computer network. An access server, executed by a first computer accesses interface definitions stored in a database. A data access library, coupled to the access server and executed by a second computer, provides the interface definitions to be stored in the database by the access server. A server, coupled to the data access library and executed by a third computer, sends requests to maintain and use stored interface definitions in the database. An set of code generation data, stored in the database, which allows developers to give hints to the programmer and/or the code generator for default values, validation specifications and GUI presentation hints for a given field.

19 Claims, 2 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	FIGS	Drawing
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☐ 11. Document ID: US 5918220 A



US-PAT-NO: 5918220

DOCUMENT-IDENTIFIER: US 5918220 A

TITLE: Method and system for worldwide media selection, production, and delivery

DATE-ISSUED: June 29, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sansone; Ronald P.	Weston	CT		
Levitsky; Paul A.	Bridgeport	CT		

US-CL-CURRENT: 705/408; 235/375, 700/233, 700/235, 705/401, 705/8

## ABSTRACT:

The invention is a method for selecting, producing, and delivering a finished mail piece. The method includes the step of selecting, at an initiating node, a set of parameters which together comprise a mail piece to be produced at a remote location. The selection is made from a series of menus within a program resident within a data processing system. Among the parameters which can be selected or determined are the destination address, type of delivery service to be used, and a choice of the media stock upon which a selected text can be printed. Additionally, a choice of language for the text can be made, and an account number for debiting the cost of the transaction may be entered. The selected parameters are transmitted to a data center which reads the destination address and then determines the most appropriate destination node. It is possible for the data center to be co-located with the initiating node or, to be the destination node. The data center, which maintains all data with respect to a particular transaction, will transmit the selected parameters to the destination node. Upon receipt of the data, the destination node prints the selected text upon a media which is inserted into an envelope with the destination address printed upon the envelope. The envelope is then franked in proper local currency and delivered to a local postal stream for final delivery to the destination address.

16 Claims, 11 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 11

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	Index	Drawings
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Terms

Documents

L4 AND (central ADJ repository)AND message

11

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## Refine Search

### Search Results -

Terms	Documents
L4 AND (central ADJ repository)AND message	11

Database:

US Pre-Grant Publication Full-Text Database  
US Patents Full-Text Database  
US OCR Full-Text Database  
EPO Abstracts Database  
JPO Abstracts Database  
Derwent World Patents Index  
IBM Technical Disclosure Bulletins

Search:

L6

Refine Search

Recall Text

Clear

Interrupt

### Search History

DATE: Saturday, October 29, 2005 [Printable Copy](#) [Create Case](#)

#### Set Name Query

side by side

DB=USPT; PLUR=NO; OP=OR

#### Hit Count Set Name

result set

<u>L6</u>	L4 AND (central ADJ repository)AND message	11	<u>L6</u>
<u>L5</u>	L4 AND (central ADJ message ADJ repository)	0	<u>L5</u>
<u>L4</u>	(717/103.ccls. OR 705/8.ccls. OR 709/231.ccls.)	1425	<u>L4</u>
<u>L3</u>	L2 and @PY<2003	71	<u>L3</u>
<u>L2</u>	L1 AND (717/\$\$\$ccls. OR 705/\$\$\$ccls. OR 709/\$\$\$ccls.)	138	<u>L2</u>
<u>L1</u>	Workflow ADJ system	226	<u>L1</u>

END OF SEARCH HISTORY

Inference Search

## Refine Search

## Search Results -

Terms	Documents
central ADJ message ADJ repository	2

Database:

US Pre-Grant Publication Full-Text Database  
 US Patents Full-Text Database  
 US OCR Full-Text Database  
 EPO Abstracts Database  
 JPO Abstracts Database  
 Derwent World Patents Index  
 IBM Technical Disclosure Bulletins

Search:

L7

Refine Search

Recall Text

Clear

Interrupt

## Search History

DATE: Saturday, October 29, 2005 [Printable Copy](#) [Create Case](#)

Set Name Query

side by side

Hit Count Set Name

result set

DB=PGPB; PLUR=NO; OP=OR

L7 central ADJ message ADJ repository2 L7

DB=USPT; PLUR=NO; OP=OR

L6 L4 AND (central ADJ repository)AND message11 L6L5 L4 AND (central ADJ message ADJ repository)0 L5L4 (717/103.ccls. OR 705/8.ccls. OR 709/231.ccls.)1425 L4L3 L2 and @PY<200371 L3L2 L1 AND (717/\$\$\$ccls. OR 705/\$\$\$ccls. OR 709/\$\$\$ccls.)138 L2L1 Workflow ADJ system226 L1

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 2 of 2 returned.

☐ 1. Document ID: US 20050002503 A1

L7: Entry 1 of 2

File: PGPB

Jan 6, 2005

PGPUB-DOCUMENT-NUMBER: 20050002503

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050002503 A1

TITLE: Electronic mail distribution system for integrated electronic communications

PUBLICATION-DATE: January 6, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Owens, Stephen J.H.	Plano	TX	US
Finney, Michael S.	Hilliard	OH	US
Snider, Michael L.	Columbus	OH	US
Wright, Randall S.	Worthington	OH	US
Paynter, James W.	Hilliard	OH	US
Bard, Robin R.	Dublin	OH	US

US-CL-CURRENT: 379/93.24; 707/10

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMK	Draw G
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☐ 2. Document ID: US 20030225923 A1

L7: Entry 2 of 2

File: PGPB

Dec 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030225923

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030225923 A1

TITLE: Apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes

PUBLICATION-DATE: December 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Cyr, Vincent R.	Glen Mills	PA	US
Fritz, Kenneth	Glen Mills	PA	US

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checked  
same IE

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	PMC	Drawings
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Terms	Documents
central ADJ message ADJ repository	2

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File: PGPB

Dec 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030225923  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20030225923 A1

TITLE: Apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes

PUBLICATION-DATE: December 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Cyr, Vincent R.	Glen Mills	PA	US
Fritz, Kenneth	Glen Mills	PA	US

APPL-NO: 09/737494    [\[PALM\]](#)  
DATE FILED: December 15, 2000

INT-CL: [07] G06 F 9/46  
US-CL-PUBLISHED: 709/313  
US-CL-CURRENT: 719/313

REPRESENTATIVE-FIGURES: 2

ABSTRACT:

The present invention comprises apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes. A central message repository or database is constructed, comprised of monitoring messages sent from process messaging systems. The database may then be accessed or queried as desired. A simulation tool assists in reviewing present and proposed processes and sub-processes before modifying existent systems or creating new systems.

[0001] The present invention relates to apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes. More particularly, the present invention relates to computer-based apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes in an asynchronous messaging environment.

BACKGROUND OF THE INVENTION

[0002] The activities of a business or enterprise can be grouped into processes. Processes are business operations that are separated as desired and usually occur across business units. For example, the process of taking orders and turning those orders into revenue may be known as Order to Cash. The processes are comprised of sub-processes. For example, Order to Cash may be broken down into sub-processes such as Receive Order Inquiry, Provide Customer Quotation, Create Customer Outline Agreement, Create Sales Order, Schedule Production, Manufacture Product, Ship

Product and Invoice Customer. Each sub-process may in turn be broken down into discrete activities such as providing customer number, entering that customer number, establishing pricing, determining a shipping date, etc.

[0003] The processes, sub-processes and activities operate, in part, by communicating information. For example, users may communicate through email. As another example, applications may communicate amongst themselves through electronic data interchange ("EDI") and other similar services. Communication occurs horizontally, that is, among a process, sub-process and activities, as well as vertically, that is, between processes, sub-processes and activities.

[0004] Whether communications occur horizontally or vertically, among applications or users, communications are increasingly asynchronous or message based. That is, enterprise communications were formerly primarily synchronous, or connection oriented, in which a connection is established with prior coordination between communication end points with data then being transmitted over the connection. Enterprise communications are now increasingly asynchronous, or connectionless, transmitting data without prior coordination between communication end points, such as through "event based" communications which use messages to move data instead of large files.

[0005] Asynchronous or message based communications permit loosely coupled connections among and between systems because the end points do not have to be prepared to receive the data when the message is transmitted. Loosely coupled connections permit more flexibility in assembling processes. Flexibility in assembling processes is desirable in order to permit quick reaction to changing business conditions: if a particular sub-process or activity becomes unusable, the process can be reassembled with a new sub-process or activity. For example, if a Manufacture Product sub-process in the Order to Cash process at Widget Co. enterprise has a specific factory identified to manufacture the product and that factory has a fire or other disaster, making it unusable, Widget Co. will need to substitute a new factory. The ripple effect of that substitution among all of Widget Co.'s processes will change any number of parameters. A loosely coupled asynchronous connection among Widget Co.'s processes provides rapid substitution of the new factory for the old because the end points of communication to the new factory do not have to be predetermined before communications begin with the new factory. Thus, the flexibility of the asynchronous message based communication has permitted quick response to changing business conditions.

[0006] Despite this flexibility, asynchronous or message based communications are problematic because of their loosely coupled nature. At any given time, precise information on the progress of the processes is difficult to obtain--messages may be in transit and not instantly locatable. For example, if a customer calls for the status of an order, an enterprise customer service representative may be able to determine nothing more than the fact that the order has been received and that the scheduled ship date is X. There is often no ability to drill down into the information levels and review the status in more granularity, such as the location of the good, the manufacturing status, etc., because the information required to review that status is in transit and unable to be reviewed.

[0007] Of course, if the enterprise lacks the ability to access status information, business partners of the enterprise will similarly lack that ability. Thus, asynchronous communications may well increase inefficiency among business partners as well.

[0008] The difficulty in reporting caused by message based architecture also makes it difficult for the enterprise to measure the efficiency of its processes and their sub-process. Asynchronous messaging, with its indeterminate transmission of



information, means a company may not be able to easily measure the interval between each sub-process, e.g. the time between Scheduling Production and the Manufacturing of a Product, and so easily measure the efficiency of their operations.

[0009] Finally, asynchronous messaging may provide an enterprise with an ability to model and simulate processes. That is, since information flows can be readily estimated through enterprises with asynchronous messaging, and processes can be easily modeled from those flows, asynchronous messaging modeling provides the potential to model and simulate processes. That potential is not realized with present technology, however. Moreover, since as described above, enterprises lack information on the processes they have implemented, the enterprises are handicapped in their ability to modify those processes or plan new processes. A modeling and simulation tool, demonstrating processes, sub-processes and their activity or granular detail level would be extremely helpful, and would give the enterprise an opportunity to assemble, test, adjust, and simulate processes and their details.

[0010] Accordingly, it is an object of the present invention to provide a tool for simulating message based architectures.

[0011] It is a further object of the present invention to provide monitoring capabilities for enterprise processes.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 shows a view of a process.

[0013] FIG. 2 shows a view of a process of a preferred embodiment.

[0014] FIG. 3 shows a screen of a preferred embodiment.

[0015] FIG. 4 shows a screen of a preferred embodiment.

[0016] FIG. 5 shows a screen of a preferred embodiment.

[0017] FIG. 6 shows a partial view of a preferred embodiment.

[0018] FIG. 7 shows a partial view of a preferred embodiment.

[0019] FIG. 8 shows a partial view of a preferred embodiment.

[0020] FIG. 9 shows a partial view of a preferred embodiment.

[0021] FIG. 10 shows a partial view of a preferred embodiment.

#### SUMMARY OF THE INVENTION

[0022] The present invention comprises apparatus and systems for measuring, monitoring, tracking and simulating enterprise communications and processes in an asynchronous messaging environment. For each original message sent within a process, sub-process or activity, the preferred embodiments of the present invention send a separate monitoring message containing data from the central message repository or database. This data may include date, time, customer number, materials, quantity, amount, or other information, and be copied from the original message. Other embodiments may add data to the monitoring message aside from that contained in the original message.

[0023] This central message repository or database is comprised of information passing through the enterprise. In effect, the database provides a collection point or an "end point" for the asynchronous communications, and so allows the flexibility of asynchronous communications to be combined with the precision of synchronous communications. The database can be reviewed in any number of ways. For example, the database can be queried to obtain specific information about that particular order or customer or could be examined across larger time spans such as days, weeks, or months, to gauge trends or performance. Of course, some preferred embodiments may wish to create mirror databases or other databases that can be used in various ways.

[0024] An enterprise's information flow can also be readily modeled and simulated through creating new process, sub-process and/or activities or altering existing process, sub-process or activities. The information flows from those creations or alterations can be collected in one or more databases and examined as desired.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] FIG. 1 shows a sample process, Order to Cash, which is comprised of various sub-processes: Receive Order Inquiry, Provide Customer Quotation, Create Customer Outline Agreement, Create Sales Order, Schedule Production, Manufacture Product, Ship Product and Invoice Customer. The dashed line arrows connecting the sub-processes are the communication paths between the sub-processes. In the example shown in the figure, the sub-processes actually communicate through a messaging broker, such as an IBM MQSeries component, and the paths to and from the component are identified identically. This messaging broker permits certain sophisticated messaging uses, such as message queuing, some data translation, etc.

[0026] A messaging component is added to the messaging broker, through methods known in the art. This messaging component creates a "monitoring" message for each original message received by the broker. This monitoring message contains, in this embodiment, specific data generated from the original messages passing between the sub-processes. The monitoring message with its data is then sent from the messaging broker to a central database repository or database (the terms "repository" or "database" are used interchangeably throughout.)

[0027] The messaging component may be, in some embodiments, or may not be, in other embodiments, provided by the messaging broker. For example, IBM's MQSeries messaging broker provides a component that can be configured to perform a copying function for the messages it receives, and so create monitoring messages for the messages it receives.

[0028] The specific data contained in the monitoring messages (in this embodiment, generated from the original messages passing between the sub-processes) is organized into data fields. Those data fields are path specific in this embodiment. For example, assume a customer calls the enterprise (Widget Co.) whose process is shown in FIG. 1 and asks whether or not Widget Co. has a certain product (Type A Widgets.) That customer request will begin the Receive Order Inquiry sub-process which will end with the generation of a Receive Order Inquiry message traveling to the Provide Customer Quotation sub-process through the messaging broker component. When the messaging broker receives the message on Path A, it will create a monitoring message, and send the monitoring message to the central database repository, as shown in FIG. 2. In this embodiment, the data contained in the monitoring message is generated from the message on Path A. Other preferred embodiments may alter or add data to the monitoring messages aside from that contained in the original message.

[0029] The monitoring message contains, in this embodiment, specific data fields.

(Of course, other embodiments may have different data fields.) Those data fields are:

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#### FIELDS IDENTIFIERS

##### PROCESS IDENTIFIER

ProID,  
SUB-PROCESS IDENTIFIER SbProID,  
CUSTOMER NUMBER  
Custno,  
PART NUMBER Partno,  
QUANTITY Qty,  
DATE  
Date,  
TIME Time

[0030] The first field, the PROCESS IDENTIFIER field, provides the identifier for the process, for example, the value "Order to Cash" because the monitoring message is being created within the Order to Cash process. The second field, the SUB-PROCESS IDENTIFIER field, provides the identifier for the sub-process, for example, the value "Inquiry" because the monitoring message is being created within the Inquiry sub-process. This embodiment prepopulates these PROCESS IDENTIFIER and SUB-PROCESS IDENTIFIER fields, with the appropriate values.

[0031] The CUSTOMER NUMBER field is assigned to the particular customer generating the inquiry. The PART NUMBER field is the identifier for the particular part and the QUANTITY for the particular quantity. DATE and TIME are the data and time the message is generated. Other message fields for other paths of this embodiment are shown in Table 1. Of course, some, all or none of these fields may be present in other embodiments, as well as other fields as desired. For example, one or more ACTIVITY IDENTIFIER fields may be present in monitoring messages in other embodiments.

[0032] The monitoring message data populates one information flow or transaction record ("transaction record.") As monitoring messages progress through any given process and/or sub-process, the transaction record is updated. Once the monitoring messages complete the transaction record, all of the information needed to measure that transaction through the process is contained in one record in the central message database. (Of course, if the monitoring messages do not fully populate the transaction record, e.g., the transaction is aborted in mid process, then these abandoned records may be made available as well with an indication that they were abandoned.)

[0033] The central message database can be reviewed in any number of ways, in order to measure, monitor and track enterprise communications and processes, e.g., to provide information or generate reports. Using the central message database to provide information or generate reports "off loads" the information access or reporting processes from the applications that generate messages initially, e.g., sub-processes such as those seen in FIG. 1. This off loading relieves some of the monitoring pressure from the source applications so that, for example, any queries that might have been made to the source applications and interfere with or slow down the operation of the source applications can now be made through the central

message database.

[0034] The information retrieved from the central message database may include, but is not limited to, information about any particular order or customer, information about process efficiency, "snapshot" or time slice information, information across time spans such as days, weeks, or months, information to gauge trends or performance, etc. Also, in some embodiments, a "real-time" tool may be used to track the progress of transaction records and/or processes and use distribution methods such as broadcasting, WAP, etc. to provide the information to users. For example, if a process such as pipeline capacity for oil and natural gas transmissions is implemented and monitored through an embodiment of the present invention, the central message database will constantly broadcast unused pipeline capacity, which information in turn can be used to sell, trade or barter that unused capacity. As another example, information about an enterprise's processes can be made available over an intranet, extranet, the Internet, etc. to business partners or other entities. One example would be providing information to stock analysts so that they could track any particular enterprise's productivity or other areas of interest. Another example would be providing information to actual or potential business partners to check production capacity, shipping capacity, or other areas of interest. In some embodiments, with regard to external entities, communication channels between the external entities and the enterprise might well be established, so that central message databases exist on both ends of the communication channel.

[0035] The central message database allows for broader analysis of trends that may include: time between sub-processes, variances by customer, variances by order amount, bottlenecks in the process, etc. For example, it would be possible to determine how many orders stood between Order and Invoice. This may allow for the acceleration of some orders so they could be booked by quarter close. For example, a vendor bottleneck may be identified in the course of review of the processes, sub-processes and/or activities. For example, seasonal variations in processes, sub-processes and/or activities may be identified as well.

[0036] Of course, some embodiments may create mirror databases and/or generate other databases that can be used by various entities. For example, an enterprise may create a number of central message databases which could track processes, sub-processes and/or activities in whole or part. These databases could also be combined as desired.

[0037] Monitoring message database(s) may be used, in some embodiments, in various ways, either in addition to or instead of central message database(s.) For example, a monitoring message database or a central message database may be used to generate messages and feedback to the processes, sub-processes, activities and/or applications, as well as to users and/or administrators (herein generally "users.") Various messages transmitted from sub-process applications such as error messages would generate special monitoring messages which would be added to a message monitoring database. Other events, exceptions, triggers and thresholds, could be tracked as well in various embodiments and be used to signal conditions, problems, etc. by various methods such as "flagged" or specially designated messages or other indicators.

[0038] Access to the database(s) is, in the preferred embodiments, on a secured or authorized basis, with different users obtaining different levels of access to the data in the database.

[0039] FIG. 3 shows a screen shot of an example of a preferred embodiment where access was made available to a customer over a corporate extranet. The screen shot is of a report, generated through an XML link to the central message database, of

that particular customer's orders. In the preferred embodiments, the customer has the option to "drill down" through this screen to other screens for further detail. So, for example, FIG. 4 shows a result of one such operation, where the customer had drilled down from the screen of FIG. 3. Of course, these records may vary depending on the status of the transaction, that is, whether the transaction is in the middle of the process, at the beginning of the process, etc. Furthermore, other reporting options may be seen depending on the embodiments. Additionally, in some embodiments the user may have the option to drill down further into or past these levels if desired.

[0040] The preferred embodiments of the present invention also provide a simulation module for business processes. The simulation module makes possible simulation of new processes, their sub-processes and the activities that make up the sub-processes. This provides the enterprise or other user with the opportunity to assemble, test, adjust, and simulate processes before they are integrated into the enterprise.

[0041] The simulation module of the preferred embodiments provides the ability to assemble simulated processes in two primary ways. The first primary way is through provision of a toolkit or palette of predetermined sub-processes to the user. The user can then choose from that palette of sub-processes to form a process for an organization, which is then used in the simulation as is explained in further detail below.

[0042] The second primary method of assembling processes is to provide the user with activities, which are the most granular construct of a sub-process. Additionally, more sophisticated users will be given the opportunity to assemble their own activities. Either or both options of this second primary method can be offered in various embodiments. Additionally, the first and second primary methods can be combined in certain embodiments as well.

[0043] The preferred embodiments permit use of discrete activities among sub-processes, perhaps in an object oriented format, in order to save time and increase productivity. These activities can then be connected to form one or more sub-processes, which in turn can be connected to form one or more processes. The ability to create additional sub-processes would allow for the company to add their unique sub-processes to the palette.

[0044] It should be noted that in other embodiments, the simulation module may be constructed in other ways. For example, preconfigured, industry-specific processes may be supplied that can be altered and/or provided with enterprise specifics.

[0045] The simulation model is contained, in the preferred embodiments, on a corporate intranet or extranet. The underlying assumption of the simulation model in the preferred embodiments is that the completion of each sub-process will generate a message. So, for example, if a process such as that of FIG. 1 is simulated, the completion of the first sub-process will generate a message to be sent to the next sub-process, the completion of the next sub-process will generate a message that will be sent to the next sub-process, and so on.

[0046] FIG. 5 shows a process development environment screen for an example process called "Order" of the simulation module. Sub-processes Inquiry, Quote, Agreement, Order, Schedule, Manufacture, Ship and Invoice have been joined together to comprise this process. The sub-processes, in this example, are predetermined and their activities are predetermined. The input and output queue names are identified where appropriate. For example, the output queue name in the Inquiry sub-process is INQUIRY-OUT. That output queue then feeds data into the input queue of the Quote sub-process. (These are analogous to Path A in FIG. 1.) The base delay provides the

initial time of a sub-process. For example, the base delay for the Quote Sub-process is 1 or a time increment of 1. In contrast the Manufacture Sub-process base delay is 48, so that the time increment for the Manufacture Sub-process is 48. The Current Variation shows the Increase/Decrease Variation set by the slider, permitting an increase or decrease in the latency per process and thus permits the user to see the downstream effect of altering each sub-process time. (Other embodiments may use different apparatus and methods as known in the art to vary the latency of the sub-process.) In this example, the total time of the process is obtained by adding each base delay of each sub-process, however, each sub-process may not affect the other in a geometric or logarithmic progression. For example, varying the base delay by one time increment of the Quote sub-process may not lead to an exact one time increment variation in the Scheduling sub-process.

[0047] FIGS. 6 through 9 are examples of tools that are used in this embodiment to construct sub-process modules such as those used in FIG. 5. For example, FIG. 6 shows the properties of the Agreement sub-process module, which are the process, the sub-process and the application used in the sub-process. The process and sub-process are predetermined in this module. The user has the option of setting the application alternative of the sub-process to one or more predetermined alternatives. These alternatives would be used, for example, when a new application might be used to provide output from the sub-process.

[0048] FIG. 7 shows a message queue construction tool for the sub-process identified in FIG. 6. This tool, which may be another option combined with the process tool of FIG. 6 or some other tool in various embodiments, or may be stand-alone in other embodiments, provides the ability to select a queue manager (a process that manages different message queues in various machines or applications), input queue and output queue for the particular sub-process being simulated. Each of these options, queue manager, input queue and output queue, can be changed by using the arrows to access a drop-down menu of predetermined alternatives. Once the alternatives are chosen, the module can be saved. Of course, in other embodiments non-predetermined alternatives may be used.

[0049] FIG. 8 shows an application construction tool, which can be used to select the applications used on either end of the queue or path. Here, there are two separate targets, one external, with a single monitoring message being sent to a central message database, before the source message is split and sent to both target applications. FIG. 9 shows the particular data fields or points that may be captured in the monitoring message. These are selected by highlighting the preferred fields in this embodiment.

[0050] Other alternatives are possible for other embodiments of the simulation module. For example, the embodiments discussed above have some alternatives as predetermined, which makes the construction of sub-process modules more convenient. In other embodiments non-predetermined alternatives may be used. Moreover, any desired processes that are not defined in predetermined modules can be developed and made available to the user. For example, a tool such as that shown in FIG. 10 provides the ability to alter the process, the sub-process, and the application, by using the arrows to access a drop-down menu of predetermined alternatives, thus facilitating creation of new processes, sub-processes and/or activities. Other embodiments may use an "open ended" format to allow the creation of new processes and sub-processes and/or activities.

[0051] The simulation module is, in the preferred embodiments, either stand-alone or contained as part of a monitoring apparatus and/or system as had been described above. If the latter, then "real-time" data and processes, sub-processes and activities can be used in the simulation apparatus and/or process. The simulator module permits processes and sub-processes to be defined, simulated, and refined before modifying existent systems or implementing new systems.

[0052] The above description and the views and material depicted by the figures are for purposes of illustration only and are not intended to be, and should not be construed as, limitations on the invention.

[0053] Moreover, certain modifications or alternatives may suggest themselves to those skilled in the art upon reading of this specification, all of which are intended to be within the spirit and scope of the present invention as defined in the attached claims.

## 2TABLE 1

### PATH FIELDS IDENTIFIERS

B

PROCESS IDENTIFIER Order to cash,  
SUBPROCESS IDENTIFIER quote,

CUSTOMER NUMBER custno,  
MATTER NUMBER matno,  
QUOTE  
NUMBER quote num,  
QUANTITY qty,  
PRICE price,

AMOUNT amt,  
DATE date,  
TIME time

C PROCESS

IDENTIFIER Order to cash,  
SUBPROCESS IDENTIFIER Agreement,

CUSTOMER NUMBER custno,  
MATTER NUMBER matno,  
QUOTE  
NUMBER quote num,  
QUANTITY qty,  
PRICE price,

AMOUNT amt,  
DATE date,  
TIME time

D PROCESS

IDENTIFIER Order to cash,  
SUBPROCESS IDENTIFIER order,

ORDER NUMBER ordernum,  
QUOTE NUMBER quote num,  
CUSTOMER  
NUMBER custno,  
MATTER NUMBER matno,  
QUANTITY qty,

PRICE price,  
AMOUNT amt,  
DATE date,  
TIME time

E PROCESS IDENTIFIER Order to cash,

SUBPROCESS IDENTIFIER  
 schedule,  
 ORDER NUMBER ordernum,  
 QUOTE NUMBER quote num,  
  
 PRODUCTION NUMBER production Number,  
 PRODUCTION DATE  
 Production date,  
 PRODUCTION LOCATION production location,  
  
 PRODUCTION STATUS production status,  
 CUSTOMER NUMBER custno,  
  
 MATTER NUMBER matno,  
 QUANTITY qty,  
 PRICE price,  
  
 AMOUNT amt,  
 DATE date,  
 TIME time  
 F PROCESS  
 IDENTIFIER Order to cash,  
 SUBPROCESS IDENTIFIER mfg,  
  
 ORDER NUMBER ordernum,  
 QUOTE NUMBER quote num,  
 PRODUCTION  
 NUMBER production Number,  
 PRODUCTION DATE Production date,  
  
 PRODUCTION LOCATION Production location,  
 PRODUCTION STATUS  
 Production status,  
 CUSTOMER NUMBER custno,  
 MATTER NUMBER  
 matno,  
 QUANTITY qty,  
 PRICE price,  
 AMOUNT amt,  
  
 DATE date,  
 TIME time  
 G PROCESS IDENTIFIER Order to  
 cash,  
 SUBPROCESS IDENTIFIER ship,  
 ORDER NUMBER ordernum,  
  
 QUOTE NUMBER quote num,  
 PRODUCTION NUMBER production  
 Number,  
 PRODUCTION DATE Production date,  
 PRODUCTION  
 LOCATION production location,  
 PRODUCTION STATUS production  
 status,  
 CUSTOMER NUMBER custno,  
 SHIPPING DATE ship date,  
  
 MATTER NUMBER matno,  
 QUANTITY qty,



PRICE price,  
  
    AMOUNT amt,  
DATE date,  
TIME time  
H PROCESS  
IDENTIFIER Order to cash,  
SUBPROCESS IDENTIFIER invoice,  
  
ORDER NUMBER ordernum,  
QUOTE NUMBER quote num,  
CUSTOMER  
NUMBER custno,  
SHIPPING DATE ship date,  
MATTER NUMBER  
matno,  
QUANTITY qty,  
PRICE price,  
AMOUNT amt,  
  
    DATE date,  
TIME time

#### CLAIMS:

We claim:

1. A computerized method for use in an asynchronous messaging environment, wherein said messaging environment comprises at least one original message comprised of original message data, comprising the steps of: collecting at least part of said original message data into a central message repository; and, reviewing data collected in said central message repository.
2. The method of claim 1 wherein the step of collecting at least part of said original message data in a central message repository further comprises the step of using a monitoring message to collect data in a central message repository.
3. The method of claim 2 wherein the step of using a monitoring message to collect data in a central message repository further comprises the step of generating one monitoring message for each original message.
4. The method of claim 2 wherein the step of using a monitoring message to collect data in a central message repository further comprises the step of generating more than one monitoring message for each original message.
5. A computerized method for use in an asynchronous messaging environment, wherein said messaging environment comprises at least one original message comprised of original message data, comprising the steps of: copying at least part of said original message data into a central message repository; and, reviewing data collected in said central message repository.

6. The method of claim 5 wherein the step of copying at least part of said original message data in a central message repository further comprises the step of using a monitoring message to copy said data into a central message repository.
7. The method of claim 6 wherein the step of using a monitoring message to copy said data into a central message repository further comprises the step of generating one monitoring message for each original message.
8. The method of claim 7 wherein the step of using a monitoring message to copy said data into a central message repository further comprises the step of generating more than one monitoring message for each original message.
9. The method of claim 8 wherein the step of copying data into a central message repository further comprises the step of populating a transaction record in said central message repository.
10. The method of claim 9 wherein the step of populating said transaction record contained in said central message repository further comprises using more than one monitoring message to populate the same transaction record.
11. The method of claim 10 wherein the step of reviewing data collected in said central message repository further comprises reviewing said transaction records populated by said data.
12. The method of claim 11 wherein the step of reviewing data collected in said central message repository further comprises broadcasting said data.
13. The method of claim 12 wherein the step of reviewing data collected in said central message repository further comprises reporting said data.
14. A central message repository created by the method of claim 1.
15. A transaction record created by the method of claim 7.
16. An apparatus for use in an asynchronous messaging environment, wherein said messaging environment comprises at least one original message comprised of original message data, comprising: means for collecting data in a central message repository; and, means for reviewing data collected in said central message repository.
17. An apparatus as in claim 16 further comprising means for generating a monitoring message wherein said monitoring message collects data in a central message repository.
18. An apparatus as in claim 17 further comprising means for generating one monitoring message for each original message.
19. An apparatus as in claim 17 further comprising means for generating more than one monitoring message for each original message.
20. An apparatus for use in an asynchronous messaging environment, wherein said messaging environment comprises at least one original message comprised of original message data, comprising: means for copying at least part of said original message data into a central message repository; and, means for reviewing data collected in said central message repository.

21. An apparatus as in claim 20 further comprising means for generating a monitoring message wherein said monitoring message collects data in a central message repository.
22. An apparatus as in claim 21 further comprising means for generating one monitoring message for each original message.
23. An apparatus as in claim 21 further comprising means for generating more than one monitoring message for each original message.
24. An apparatus as in claim 20 further comprising means for broadcasting said data.
25. An apparatus as in claim 20 further comprising means for reporting said data.
26. An apparatus as in claim 20 further comprising means for populating a transaction record contained in said central message repository.
27. An apparatus as in claim 26 further comprising means for reviewing said transaction records populated by said data.
28. A computerized method for simulating processes in asynchronous messaging environment, comprising the steps of: providing at least one predetermined sub-process; assembling a process from said predetermined sub-process; and, simulating message flow through said process.
29. The method of claim 28 wherein the step of providing at least one predetermined sub-process further comprises providing a predetermined toolkit of said predetermined sub-processes.
30. The method of claim 28 wherein the step of providing at least one predetermined sub-process further comprises providing at least one industry specific sub-process.
31. The method of claim 28 wherein the step of providing at least one predetermined sub-process further comprises providing means for creating additional sub-processes.
32. The method of claim 31 wherein the step of providing means for creating additional sub-processes further comprises providing means for adding said additional sub-processes to said toolkit.
33. The method of claim 28 wherein the step of simulating message flow through said process further comprises providing a time indicator for said sub-process.
34. The method of claim 28 wherein the step of simulating message flow through said process further comprises providing a means for varying latency of said sub-process.
35. An apparatus for simulating processes in an asynchronous messaging environment, comprising the steps of: means for providing at least one predetermined sub-process; means for assembling a process from said predetermined sub-process; and, means for simulating message flow through said process.
36. An apparatus as in claim 35 further comprising means for providing a predetermined toolkit of said predetermined sub-processes.

37. An apparatus as in claim 35 further comprising means for providing at least one industry specific sub-process.

38. An apparatus as in claim 35 further comprising means for creating additional sub-processes.

39. An apparatus as in claim 38 further comprising means for adding said additional sub-processes to said toolkit.

40. An apparatus as in claim 35 further comprising a time indicator means for said sub-process.

41. An apparatus as in claim 35 further comprising means for varying latency of said sub-process.

42. A computerized method for simulating processes in an asynchronous messaging environment, comprising: establishing at least one sub-process which is comprised of at least one activity; and, establishing a process which is comprised of at least one sub-process.

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